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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/865,607	05/29/2001	In-Kyeong Yoo	249/239	4147

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LEE & STERBA, P.C.
1101 WILSON BOULEVARD
SUITE 2000
ARLINGTON, VA 22209

EXAMINER

NGUYEN, KIET TUAN

ART UNIT PAPER NUMBER

2881

DATE MAILED: 07/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/865,607

Applicant(s)

Yoo

Examiner

K. NGUYEN

Group Art Unit

2881

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-14 is/are pending in the application.
- ☒ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☒ Claim(s) 1-7 is/are allowed.
- ☒ Claim(s) 8-14 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
 - ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Rejection Under 35 U.S.C. 102(b)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States. Claims 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Brandes et al.

Brandes et al. disclose, in figs 1-5, an electron lithography apparatus using a photocathode. The apparatus includes a substrate 13 having a resist layer 12; an electron emitter 1 having desired patterns; a voltage V_a applied between the emitter 1 and the substrate 13; a plurality of focusing magnets 47-49 and 51-55 for controlling the path of electrons; and radiation means 5, 46 or 76 for heating the emitter 1 to be a phase transition temperature or higher for producing electrons.

Rejection Under 35 U.S.C. 103(a)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandes et al. in view of Firtz et al.

Brandes et al. disclose all the features as discussed above except infrared rays, a laser or an electrical resistance heater as recited in claims 9 and 12; a deflection system as recited in claim 11; and a diaphragm as recited in claim 14.

Firtz et al. disclose, in figs. 1-10, an electron projection system having deflection coils and focusing coils for controlling the path of electrons, thus would have been obvious to one skilled in the art to use the deflection coils in the Brandes et al. apparatus for controlling the path of electrons, since it well known in the art to use the magnets for deflecting and/or focusing the electrons in the electron lithography system.

Using the infrared rays, laser or electrical resistance heater for heating the photocathode is considered to be obvious variation in design, since it well known in the art to use the infrared rays, laser or electrical resistance heater for heating the photocathode, as Mankos et al. disclose using the laser beams 102 for heating the photocathode 130 to produce a plurality electron beams 103, thus would have been obvious to one skilled in the art to use the infrared rays, laser or electrical resistance heater for heating the photocathode in the Brandes et al. apparatus for producing the electron beam.

Using the diaphragm for filtering electrons in the lithography system is also considered to be obvious variation in design, since it well known in the art to use the diaphragm in the lithography system for filtering the electrons, as Feldman discloses using the diaphragm 16 for filtering the electrons in the lithography system and Mankos et al. also disclose using the beam limiting aperture 142 for filtering the electrons in the lithography system, thus would have been

obvious to one skilled in the art to use the diaphragm in the Brandes et al. apparatus for filtering electrons and exposing patterns on the substrate.

Claims 1-7 are allowed.

Reasons for indicating allowable subject matters

The prior art fails to disclose an electron lithography apparatus having a plate type electron emitter formed of a material selected from the group consisting of pyroelectric and ferroelectric material as recited in claims 1 and 4.

REMARKS

Applicant is requested to resubmit the form PTO-1449 because the form PTO-1449 filed on 02-13-03 in paper No. 3 has been lost ,

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- 1) Mankos et al. disclose an electron beam lithography system using the laser beams for heating the photocathode and the limiting aperture for filtering electrons;
- 2) Feldman discloses a scanning electron beam lithography system using the limiting aperture for filtering electrons;
- 3) Ward discloses an electron beam lithography apparatus applying a voltage between an electron emitter and a substrate; and
- 4) Groves et al. disclose an electron beam lithography system using the limiting aperture for filtering electrons.

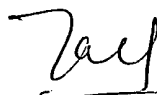
Application/Control Number: 09/865,607
Attorney's Docket No. 249/239

Art Unit: 2881
Paper No. 4

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner *Kiet T. Nguyen* whose telephone number is (703) 308-4855.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318.

K.T.N/Primary
June 22, 2003



KIET T. NGUYEN
PRIMARY EXAMINER